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NOXIOUS WEEDS

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Man in his age-long struggle for supremacy, has waged increasing warfare with Nature in her various manifestations. In the early days of the race we can, in imagination, see primitive man with stone hatchet and club fighting for his life with the great beasts of prey that ranged the earth as yet the undisputed lords of creation. A hunter, was this primitive man; his food the flesh of birds and beasts, of fish and reptiles, with grubs and insects and the fruits and roots that grew wild in the primeval forest.

After untold years of this precarious hand-to-mouth existence, man gradually learned to domesticate the sheep and goat, the horse and ass, the cow and hog. He was now less dependent on Nature (or chance) for the necessities of life, but he was forced to be a wanderer on the face of the globe in order to obtain pasture for his flocks and herds.

Another long stride in advance was made when man proceeded with wondrous care and patience to cultivate, select and improve various wild grasses, the ancestors of our various grains; and gradually produced the numerous vegetables and fruits so altered in many cases from their original state in Nature as to be in our day hardly recognizable; the wild cabbage with its small head of loose leaves becoming a solid ball a foot or more in diameter; the little wild crab being transformed into our modern apple four or five inches across.

In his struggle for existence, man with his domesticated beasts and his cultivated crops has vastly increased his advantages in the great contest; but now Nature employs more insidious forces; drouth and flood, wind and hail destroy his crops which at other times are devoured by vast swarms of locusts and grasshoppers. Innumerable microscopic forms of life (moulds, smuts, rusts, scales) infest his trees and plants and for every seed he sows, Nature sows thousands. By increasing vigilance and endless toil alone can man wrest and hold the earth from jealous Nature. His very efforts to overcome her are made use of by his insidious opponent. The plow turns up innumerable seeds which were too deeply covered to germinate. Pests and weeds accompany every new migration and follow all lines of communication. Man's carelessness in disposing of his waste products is turned against him by Nature, who utilizes his waste piles and refuse heaps for the nurseries of untold billions of bacteria, of house flies, of moths and of pests of every description.

In recent years man is beginning to imitate this insidious wisdom of Dame Nature. The housefly and the grasshopper are being inoculated with death dealing germs; the mosquito—the immediate cause of Malaria and Yellow Fever—is being exterminated by the destruction of her breeding places; our fruit trees are preserved by spraying; drouth is defied by scientific irrigation and by persistent cultivation.

Now and again new pests appear and often cause great havoc before man discovers how to combat the new enemy. Thus we have new diseases

suddenly appearing, as La Grippe—or suddenly becoming prevalent, as Appendicitis (both not improbably due to a new germ); or we have the sudden invasion of the Brown Tail Moth which cost the State of Massachusetts alone some millions of dollars; or we have the invasion of new weeds, as that which took thousands of acres in Southern Washington a year or so ago—a weed of such rapid growth and so stout that a reaper could not be used in the fields; or we have the well-known "Jim Hill Mustard," "the myriad seeded enemy of man," a single plant of which will produce millions of seeds, and which being a "tumble weed" distributes these millions over wide areas. So that the farmer who cultivates with scrupulous care may yet find the weeds increasing from year to year owing to the influx of seed from lands surrounding his own. In this connection, settlers in the western states until recently suffered hardship on account of the waste lands—often held by railroads and other corporations which refused to sell these lands—and which therefore became harbors for pests of all kinds.

The railroads were offenders in another way, especially in the days of wood-burners, by setting fire to the country through which they passed; until Governments insisted on spark arresters. Here, however, the loggers were often great offenders, leaving piles of limbs and brush scattered here and there, a menace not only in respect to fire, but as a breeding place for moths and other pests. In our own Province oftentimes we find roads and trails blocked in this manner, or the rubbish so encroaching on the right-of-way that the efficiency of the road as a fire guard is greatly diminished. Many times these roads and trails have been constructed for the special benefit of these loggers, who neglect what should be their duty, keeping them clear of the waste of their lumbering operations, and then the unfortunate Road Superintendent is blamed by the Forestry Department for not keeping his trails clear.

But to return from our digression on the shortcomings of the logger, to the subject of pests, and in this connection we will consider noxious weeds in particular.

We have noticed the menace of waste lands, but there is another source of danger which runs right into the farmers' land. Every road becomes a nursery for weeds; every horse, cart or pedestrian is apt to introduce weed seeds which, sticking to the hoofs, wheels or shoes, as the case may be, are dropped here and there. A remarkable illustration of the difficulty of excluding weed seeds is afforded in the case of the settlement of the mutineers of the "Bounty" on Pitcairn Island; every care was taken, carefully cleaned seed and new implements were used, and yet certain common English weeds appeared. Their advent was traced to a single old shovel which one of the settlers had brought with him and which must have had these seeds sticking to it.

We thus see the farmer surrounded on all sides by hostile forces; the elements, gophers and moles beneath the ground, insects and fungoid pests flourishing in the wild and neglected lands, and weeds on these and on the roads and railroads. The farmer who can afford to hire help must use increasing vigilance during the growing season to prevent the loss of his crops; how much more then, the humble settler when he is a farmer and not, as too often, a mere speculator. Early and late must the latter

work, he and his wife, if he has one, to win his crop from the encroaching wilderness. But not only must he—poor, overworked mortal—tend his farm; he must also keep clean the public road if such pass through or adjacent to his land. And every person who passes and who reaps the benefit from the existence of the road, every vehicle, every animal, brings its quota of weed seeds. Let us suppose his land is twenty chains by eighty chains, and let a road run through the length of it, then he has at least eight acres to keep clear of weeds (eight acres to farm without return, without crop, without profit). If the road runs along his boundary he has at least four acres to tend, or if along two boundaries he has at least five.

There seems to be injustice in this, that all use the road but the farmer alone has to tend the weeds. The hardship is far more severe in new countries than in those that are settled up, for in the latter the owner frequently does not live on his land, but rents to another; and again the land is very frequently cut up into smaller lots so that the work of tending the road is more subdivided, and moreover the proportion of the right-of-way in use is greater and there is more "travel" so that there is less area remaining for the growth of weeds.

But there is another phase of this subject. We live in an age distinguished for the utilization of waste products. Every week sees an advance. Fortunes are made out of scrap-piles, waste heaps and refuse. At the same time in the newly settled regions of the earth, we are confronted with waste so enormous as to probably far off-set the gains above referred to. Millions of feet of lumber have been left to rot on the ground in rejected logs; innumerable red Hemlock have been stripped of their bark for the tanner, the timber rejected; immense quantities of sawdust are annually burned or worse, turned into streams to choke the fish—sawdust which might be converted into alcohol, into fuel, or put to various other uses which the skill of man has devised or will devise. Even apparently a considerable waste as of the limbs and branches of trees, is never wasted, a source of fuel which would be a godsend to the miserable inhabitants of the slums of the great cities of the world.

But there is another waste which is by no means necessary nor is it of slight magnitude. Consider the public roads of North America; the general width of right-of-way is sixty-six feet, giving an area of eight acres for each mile of length. Of this sixty-six feet, the road proper with its ditches utilizes from twelve to twenty feet—say twenty-two feet, one-third of sixty-six. Consequently we have left two-thirds of our right-of-way, five and one-third acres per mile, for what? To grow weeds?

Let us see how the thrifty German people handle this question. In Germany the farming community live in villages; the isolated farm so common in all countries of the English-speaking race, is if not non-existent, at least rare. The better roads are laid out with grass sown on each side and trees planted at regular intervals—in many cases fruit trees whose product, handled by the Government, goes a long way toward paying for the up-keep of the road. One sees great flocks of geese feeding on the grass, each flock tended by a little child who takes the flock home to the village at night.

In certain parts of the South of England also, fruit trees are planted

along the sides of the less frequented roads. It is, indeed, likely that if planted along the main roads the chance of their even producing a crop is small, for the English stand in less awe of the authorities than do their German cousins. Still less would such a scheme be workable in North America.

Let us now turn our attention to our neighbors in the United States, where the Good Roads Movement is one of the questions of the hour. In order to have good, well drained roads, it is imperative that the weeds be kept down; and not merely kept down but kept from growing. But this is possible only by repeated cultivation during the growing season, or by treatment with chemicals, or by sowing to some strong-growing, domesticated plant such as timothy, or some one of the leguminous family, as alfalfa or clover. The first two are precluded by their too great height; of the latter, the white variety is very suitable. All these various methods have been and are in use in the United States. The two latter can be handled by the State or County authorities and when completed, need only occasional attention; but the first method (repeated cultivation) can only be carried on by the man on the spot. In this case, the unused side widths of the right-of-way have been turned over to the farmer—returned to the owner of the adjacent land—who thereupon cultivates it as part of his farm, moving his fence if such seem good to him, so as to enclose the erstwhile useless and pernicious side width.

It may be well to consider a few figures whereby we may arrive at some idea of the amount of land lying idle in the roads of North America. Let us then for convenience, consider an ordinary Township divided into 36 sections with a 66 foot road allowance between each. Now a section is 36 chains by 36 chains, and a half road allowance around this gives us, as it were, a border about the square 33 feet wide. The area of this border then is 15.9 acres. Hence from each section we have 15.9 acres for road allowance. Multiply this number by 36 and we get the road acreage per township, being 572.4 acres. Of this allowing 22 feet for the road and ditches, we have left two-thirds of 572.4 acres; that is to say 381.6 acres of waste land per Township. Perhaps apology should be made for terming this waste land. Shall we then call it weed-land or weed-nursery or merely weed-width?

In round numbers we may say that North America without Mexico contains seven millions square miles. Let us consider only one-tenth of this and we have 700,000 square miles. Now a section, which is a square mile, has as we have seen, at least 15.9 acres of road allowance, of which 10.6 acres is side-width (weed-land). Hence in our 700,000 square miles we have 7,420 acres of land in the side-widths of the right-of-way of roads laid out according to the township plan. This number must be considered as a minimum, for as the country becomes settled up the one-tenth which we assumed will be exceeded, if not already exceeded. We would probably be within the fact if we stated that ten or even twenty millions of acres would be lost as productive land to the communities of Canada and the United States if the side-widths of the roads be not utilized.

In our Province of British Columbia the problem is at the present time narrower. Already the pre-emptor has more land than he can look after. Hence of our three methods of treatment, namely: Repeated

cultivation, chemicals or parking, as we may call it, the first is impracticable. Of the two latter the last appears the more feasible. Having constructed our road-bed and ditches, the side-width will be cleaned up and sown, say to white clover. A little attention now and then to re-seeding spots where growth has failed and to cleaving out young trees will in a year or two give a clean, strong growth which will bid defiance to noxious weeds. Now, plant shade trees at regular intervals and then will our roads be converted into boulevards or a delight to the traveller, a relief, an object lesson to the farmer and a monument to the Government, to the people, and (may I say it?) to the Road Superintendent.

Let us consider once more conditions as they are. The land-owner adjacent to whose land the road lies, must tend such adjacent portion of the road. But in the case represented in this diagram, the owner of Lot A has no portion of the road to tend, although he can and will make use of the roads as often as the other owners. Indeed, the owners of B. and C. have to tend the portion X of the road which in all likelihood will be used only by the owner of A.

Finally, a few words should be said about the neglect of many municipalities wherein weeds run riot, and by winds, by birds, and by other means, seed is scattered for miles over the surrounding country. Neglect and carelessness in any place, or by any person or corporation, is a menace to the community at large—a menace which can be overcome only by complete co-operation between the Government, the farmers and the Municipal Authorities.

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